

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

OFFICE ENGINEER

1727 30<sup>th</sup> Street MS-43

P.O. BOX 168041

SACRAMENTO, CA 95816-8041

FAX (916) 227-6214

TTY 711

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May 13, 2011

03-Sac-160-5.9/21.1

03-3M7104

Project ID 0300000594

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN SACRAMENTO COUNTY AT VARIOUS LOCATIONS FROM SACRAMENTO RIVER (ISLETON) BRIDGE TO SACRAMENTO RIVER (PAINTERSVILLE) BRIDGE.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Wednesday, May 18, 2011.

This addendum is being issued to revise the Project Plans, the Notice to Bidders and Special Provisions, and the Bid book.

Project Plan Sheets 9, 10, and 11 are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheet 11A is added. A copy of the added sheet is attached for addition to the project plans.

In the Notice to Bidders, the working days is revised as follows:

"Complete the work within 250 working days."

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the fourth paragraph is revised as follows:

"All three bridges in Chart No. 1 of Section 10-1.09, "MAINTAINING TRAFFIC", shall remain fully operational during construction to accommodate waterway traffic. Wherever waterway traffic pass through the bridge area, no work will be allowed until waterway traffic clears the bridge area."

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In the Special Provisions, Section 10-1.15, "EXISTING HIGHWAY FACILITIES," subsection "EXISTING PAINT SYSTEMS," subsection "Containment System," the third paragraph is revised as follows:

"The minimum total design load of the ventilated containment structure shall consist of the sum of the dead and live vertical loads. Dead load shall consist of the actual load of the ventilated containment structure. Live loads shall consist of a uniform load of not less than 45 psf, which includes 20 psf of sand load, applied over the area supported, and in addition, a moving 1000 pound concentrated load shall be applied to produce maximum stress in the main supporting elements. Assumed horizontal loads need not be included in the design of ventilated containment structure."

In the Special Provisions, Section 10-1.15, "EXISTING HIGHWAY FACILITIES," subsection "EXISTING PAINT SYSTEMS," subsection "Containment System," the following paragraph is added after the third paragraph.

"The dead load plus live load of this scaffolding shall not exceed the equivalent uniform load of 80 psf on the tower portion of the movable bridges, 60 psf on the bascule portion of the movable bridges, and 60 psf on the approach span bridges. In addition to the scaffolding loads described above, a single construction vehicle, which conforms with the legal weight limit, may also be driven on the centerline of bridges."

In the Special Provisions, Section 10-1.15, "EXISTING HIGHWAY FACILITIES," subsection "REMOVE RIVETS," is added as attached.

In the Special Provisions, Section 10-1.15, "EXISTING HIGHWAY FACILITIES," subsection "RECONSTRUCT STEEL LATTICE," is added as attached.

In the Bid book, in the "Bid Item List," Item 16 is revised, Item 17 is deleted, Items 18, 19 and 20 are added as attached.

To Bid book holders:

Replace page 3 of the "Bid Item List" in the Bid book with the attached revised page 3 of the Bid Item List. The revised Bid Item List is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

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This addendum and its attachments are available for the Contractors' download on the Web site:

**[http://www.dot.ca.gov/hq/esc/oe/project\\_ads\\_addenda/03/03-3M7104](http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/03/03-3M7104)**

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

A handwritten signature in cursive script that reads "Jody Jones".

JODY JONES  
District Director

Attachments



## **REMOVE RIVET**

Removing rivets shall conform to the requirements in Section 15, "Existing Highway Facilities," and Section 55, "Steel Structures," of the Standard Specifications and these special provisions.

Attention is directed to Section 7-1.09, "Public Safety, " and Section 7-1.12, "Responsibility for Damage, " of the Standard Specifications.

Attention is directed to "Existing Paint Systems, " in these special provisions regarding containment of paint during rivet removal.

Furnishing and installing bolts at rivet removal locations, as shown on the plans, will be measured and paid for separately as specified in "Steel Structures," in these special provisions.

The Contractor shall submit to the Engineer for approval the proposed method for rivet removal in accordance with the requirements in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications.

The Contractor shall demonstrate the proposed method for rivet removal using the equipment and procedures proposed for the work. Specific rivets to be removed for the demonstrations will be determined by the Engineer. The Engineer shall be notified a minimum of 24 hours prior to the Contractor performing any rivet removal demonstrations.

The Contractor shall demonstrate the type of heat to be used for rivet removal. Care shall be taken not to enlarge rivet holes or to damage remaining material. Heat resulting from any removal method shall not damage rivet holes or the surrounding materials. The Contractor shall be required to obtain a Hot Work Permit for any cutting, welding, heat gun, or open flame torch work. The permit shall be good through completion of the work. The Contractor, through the Engineer, shall contact the Presidio Fire Inspection and Prevention Office a minimum of four days prior to the date the hot work is needed to avoid delays in work.

The Fire Department shall have access to the project site at all times. Fence gates or emergency openings, when needed, shall be wide enough and kept clear so as to provide unobstructed access at all times for fire apparatus.

The Contractor shall post emergency telephone numbers at the job site (FOR FIRE, POLICE, OR EMERGENCY MEDICAL SERVICES CALL 911).

Rivet removal, other than removal for the demonstrations, will not be permitted until the removal method has been approved by the Engineer. The Engineer will notify the Contractor one week after the removal demonstration whether the proposed methods are approved or rejected.

In the event that the Engineer determines that rivet removal work is resulting in damage to the existing steel, the Contractor shall cease rivet removal operations until a new proposed method for rivet removal has been approved by the Engineer.

Where existing rivets are removed, and the resulting holes require enlargement, the holes shall be enlarged by not more than 1/16 inch in diameter greater than the nominal bolt diameter shown on the plans. Holes shall be enlarged by reaming.

At locations where surrounding material has been damaged as a result of the Contractor's operations, the surrounding material shall be repaired. When reaming of more than 1/16-inch in diameter greater than the nominal bolt diameter shown on the plans and installing an oversize bolt is required for the repair, the reaming, furnishing and installing of oversized bolts shall be at the Contractor's expense.

At locations where rivet holes contain cracked, torn, or otherwise damaged material due to conditions other than the Contractor's operations, the Contractor shall ream the hole and install an oversized bolt. Additional reaming more than 1/16 inch in diameter than the nominal bolt diameter shown on the plans, including the difference between the actual cost of the bolt shown on the plans and the oversized bolt, shall be done as directed by the Engineer and will be paid for as extra work as provided in Section 4-1.03 D of the Standard Specifications. Installing oversized bolts shall be at the Contractor's expense.

Inside surfaces of holes remaining after rivet removal or reaming shall be painted in accordance to and be measured and paid for as specified for existing steel surfaces in "Clean and Paint Structural Steel (Bridge No. 24-0051 and No. 24-0053)", elsewhere in these special provisions.

Remove rivet will be measured and paid for by unit.

The contract unit price paid for remove rivet shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in removing rivets, including submitting the proposed method for rivet removal, and demonstrating the proposed method, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

Full compensation for enlarging rivets holes by not more than 1/16 inch in diameter greater than the nominal bolt diameter shown on the plans, shall be considered as included in the contract unit price paid for remove rivet and no additional compensation will be allowed therefor.

## **RECONSTRUCT STEEL LATTICE**

Reconstruction of steel lattice shall conform to the provisions in Section 55, "Steel Structures," of the Standard Specifications and these special provisions.

Attention is directed to "Welding" in Section 8, "Materials," of these special provisions.

## **MATERIALS**

### **ROTATIONAL CAPACITY TESTING PRIOR TO SHIPMENT TO JOB SITE**

Rotational capacity tests shall be performed on all lots of high-strength fastener assemblies prior to shipment of these lots to the project site. Zinc-coated assemblies shall be tested after all fabrication, coating, and lubrication of components has been completed. One hardened washer shall be used under each nut for the tests.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Each combination of bolt production lot, nut lot, and washer lot shall be tested as an assembly.

A rotational capacity lot number shall be assigned to each combination of lots tested. Each shipping unit of fastener assemblies shall be plainly marked with the rotational capacity lot number.

Two fastener assemblies from each rotational capacity lot shall be tested.

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of long bolts. Fasteners are considered to be long bolts when full nut thread engagement can be achieved when installed in a bolt tension measuring device:

#### **A. Long Bolt Test Equipment:**

1. Calibrated bolt tension measuring device with adequate tension capacity for the bolts being tested.
2. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Long Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F 436.
4. Steel beam or member, such as a girder flange or cross frame, to which the bolt tension measuring device will be attached. The device shall be accessible from the ground.

#### **B Long Bolt Test Procedure:**

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.
3. Insert the bolt into the bolt tension measuring device and install the required number of washers, and additional spacers as needed, directly beneath the nut to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug tension shall not be less than the Table A value but may exceed the Table A value by a maximum of 2 kips.



Table A

High-Strength Fastener Assembly Tension Values to Approximate Snug-Tight Condition	
Bolt Diameter (inches)	Snug Tension (kips)
1/2	1
5/8	2
3/4	3
7/8	4
1	5
1-1/8	6
1-1/4	7
1-3/8	9
1-1/2	10

5. Match-mark the assembly by placing a heavy reference start line on the face plate of the bolt tension measuring device which aligns with (1) a mark placed on one corner of the nut and (2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make an additional mark on the face plate, either 2/3 of a turn, one turn, or 1-1/3 turn clockwise from the heavy reference start line, depending on the bolt length being tested as shown in Table B.

Table B

Required Nut Rotation for Rotational Capacity Tests <sup>(a) (b)</sup>	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	2/3
Greater than 4 bolt diameters but no more than 8 bolt diameters	1
Greater than 8 bolt diameters, but no more than 12 bolt diameters <sup>(c)</sup>	1-1/3

(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees; for bolts installed by 2/3 turn and more, the tolerance shall be plus or minus 45 degrees.

(b) Applicable only to connections in which all material within grip of the bolt is steel.

(c) When bolt length exceeds 12 diameters, the required rotation shall be determined by actual tests in a suitable tension device simulating the actual conditions.

6. Turn the nut to achieve the applicable minimum bolt tension value listed in Table C. After reaching this tension, record the moving torque, in foot-pounds, required to turn the nut, and also record the corresponding bolt tension value in pounds. Torque shall be measured with the nut in motion. Calculate the value, T, where  $T = [(the\ measured\ tension\ in\ pounds) \times (the\ bolt\ diameter\ in\ inches) / 48]$ .

Table C

Minimum Tension Values for High-Strength Fastener Assemblies	
Bolt Diameter (inches)	Minimum Tension (kips)
1/2	12
5/8	19
3/4	28
7/8	39
1	51
1-1/8	56
1-1/4	71
1-3/8	85
1-1/2	103

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7. Turn the nut further to increase bolt tension until the rotation listed in Table B is reached. The rotation is measured from the heavy reference line made on the face plate after the bolt was snug-tight. Record this bolt tension.
8. Loosen and remove the nut and examine the threads on both the nut and bolt.

C. Long Bolt Acceptance Criteria:

1. An assembly shall pass the following requirements to be acceptable: (1) the measured moving torque (Step 6) shall be less than or equal to the calculated value, T (Step 6), (2) the bolt tension measured in Step 7 shall be greater than or equal to the applicable turn test tension value listed in Table D, (3) the nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, (4) the bolt does not shear from torsion or fail during the test, and (5) the assembly does not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head is expected and will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

Table D Turn Test Tension Values	
Bolt Diameter (inches)	Turn Test Tension (kips)
1/2	14
5/8	22
3/4	32
7/8	45
1	59
1-1/8	64
1-1/4	82
1-3/8	98
1-1/2	118

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of short bolts. Fasteners are considered to be short bolts when full nut thread engagement cannot be achieved when installed in a bolt tension measuring device:

A. Short Bolt Test Equipment:

1. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Short Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
2. Spud wrench or equivalent.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F 436.
4. Steel plate or girder with a hole to install bolt. The hole size shall be 1/16 inch greater than the nominal diameter of the bolt to be tested. The grip length, including any plates, washers, and additional spacers as needed, shall provide the proper number of threads within the grip, as required in Step 2 of the Short Bolt Test Procedure.

B. Short Bolt Test Procedure:

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.



3. Install the bolt into a hole on the plate or girder and install the required number of washers and additional spacers as needed between the bearing face of the nut and the underside of the bolt head to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug condition shall be the full manual effort applied to the end of a 12-inch long wrench. This applied torque shall not exceed 20 percent of the maximum allowable torque in Table E.

Table E

Maximum Allowable Torque for High-Strength Fastener Assemblies	
Bolt Diameter (inches)	Torque (ft-lb)
1/2	145
5/8	285
3/4	500
7/8	820
1	1220
1-1/8	1500
1-1/4	2130
1-3/8	2800
1-1/2	3700

5. Match-mark the assembly by placing a heavy reference start line on the steel plate or girder which aligns with (1) a mark placed on one corner of the nut and (2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make 2 additional small marks on the steel plate or girder, one 1/3 of a turn and one 2/3 of a turn clockwise from the heavy reference start line on the steel plate or girder.
6. Using the torque wrench, tighten the nut to the rotation value listed in Table F. The rotation is measured from the heavy reference line described in Step 5 made after the bolt was snug-tight. A second wrench shall be used to prevent rotation of the bolt head during tightening. Measure and record the moving torque after this rotation has been reached. The torque shall be measured with the nut in motion.

Table F

Nut Rotation Required for Turn-of-Nut Installation <sup>(a),(b)</sup>	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	1/3

(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees.

(b) Applicable only to connections in which all material within grip of the bolt is steel.

7. Tighten the nut further to the 2/3-turn mark as indicated in Table G. The rotation is measured from the heavy reference start line made on the plate or girder when the bolt was snug-tight. Verify that the radial line on the bolt end or on the exposed portions of the threads of tension control bolts is still in alignment with the start line.

Table G

Required Nut Rotation for Rotational Capacity Test	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	2/3

8. Loosen and remove the nut and examine the threads on both the nut and bolt.



C. Short Bolt Acceptance Criteria:

1. An assembly shall pass the following requirements to be acceptable: (1) the measured moving torque from Step 6 shall be less than or equal to the maximum allowable torque from Table E, (2) the nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, (3) the bolt does not shear from torsion or fail during the test, and (4) the assembly shall not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

**INSTALLATION TENSION TESTING AND ROTATIONAL CAPACITY TESTING AFTER ARRIVAL ON THE JOB SITE**

Installation tension tests and rotational capacity tests on high-strength fastener assemblies shall be performed by the Contractor prior to acceptance or installation and after arrival of the fastener assemblies on the project site. Installation tension tests and rotational capacity tests shall be performed at the job site, in the presence of the Engineer, on each rotational capacity lot of fastener assemblies.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Installation tension tests shall be performed on 3 representative fastener assemblies in conformance with the provisions in Section 8, "Installation," of the RCSC Specification. For short bolts, Section 8.2, "Pretensioned Joints," of the RCSC Specification shall be replaced by the "Pre-Installation Testing Procedures," of the "Structural Bolting Handbook," published by the Steel Structures Technology Center, Incorporated.

The rotational capacity tests shall be performed in conformance with the requirements for rotational capacity tests in "Rotational Capacity Testing Prior to Shipment to Job Site" of these special provisions.

At the Contractor's expense, additional installation tension tests, tests required to determine job inspecting torque, and rotational capacity tests shall be performed by the Contractor on each rotational capacity lot, in the presence of the Engineer, if:

1. Any fastener is not used within 3 months after arrival on the job site,
2. Fasteners are improperly handled, stored, or subjected to inclement weather prior to final tightening,
3. Significant changes are noted in original surface condition of threads, washers, or nut lubricant, or
4. The Contractor's required inspection is not performed within 48 hours after all fasteners in a joint have been tensioned.

Failure of a job-site installation tension test or a rotational capacity test will be cause for rejection of unused fasteners that are part of the rotational capacity lot.

When direct tension indicators are used, installation verification tests shall be performed in conformance with Appendix Section X1.4 of ASTM Designation: F 959, except that bolts shall be initially tensioned to a value 5 percent greater than the minimum required bolt tension.

**SURFACE PREPARATION**

For all bolted connections the following shall be cleaned and coated before assembly in conformance with the provisions for cleaning and painting structural steel of these special provisions:

1. Contact surfaces,
2. Outer surfaces of existing members that are within the grip and will be hidden by surfaces of outside existing members within the grip under bolt heads, nuts, and washers, and
3. Inside surfaces of bolt holes.

**WELDING**

Table 2.2 of AWS D1.5 is superseded by the following table:

Base Metal Thickness of the Thicker Part Joined, inches	Minimum Effective Partial Joint Penetration Groove Weld Size*, inches
Over 1/4 to 1/2 inclusive	3/16
Over 1/2 to 3/4 inclusive	1/4
Over 3/4 to 1-1/2 inclusive	5/16
Over 1-1/2 to 2-1/4 inclusive	3/8
Over 2-1/4 to 6 inclusive	1/2
Over 6	5/8

\* Except the weld size need not exceed the thickness of the thinner part

The requirement of conformance with AWS D1.5 shall not apply to work conforming to Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per each unit for reconstructing steel lattice shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and erecting structural steel, and furnishing and installing bolts at rivet removal locations or missing bolts at some locations directed by the Engineer or shown on the plans, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

**BID ITEM LIST**  
**03-3M7104**

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
1	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM	LUMP SUM	
2	070018	TIME-RELATED OVERHEAD	LS	LUMP SUM	LUMP SUM	
3	074016	CONSTRUCTION SITE MANAGEMENT	LS	LUMP SUM	LUMP SUM	
4	074017	PREPARE WATER POLLUTION CONTROL PROGRAM	LS	LUMP SUM	LUMP SUM	
5	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM	LUMP SUM	
6	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
7	120120	TYPE III BARRICADE	EA	30		
8	128650	PORTABLE CHANGEABLE MESSAGE SIGN	LS	LUMP SUM	LUMP SUM	
9	190110	LEAD COMPLIANCE PLAN	LS	LUMP SUM	LUMP SUM	
10	043082	SECURE BASCULE SPAN	EA	6		
11	590106	CLEAN STRUCTURAL STEEL (EXISTING BRIDGE)	LS	LUMP SUM	LUMP SUM	
12	590111	PAINT STRUCTURAL STEEL (EXISTING BRIDGE)	LS	LUMP SUM	LUMP SUM	
13	590116	CLEAN AND PAINT STRUCTURAL STEEL (EXISTING BRIDGE)	LS	LUMP SUM	LUMP SUM	
14	590135	SPOT BLAST CLEAN AND PAINT UNDERCOAT	SQFT	15,980		
15	590301	WORK AREA MONITORING	LS	LUMP SUM	LUMP SUM	
16	043083	RECONSTRUCT STEEL BRIDGE RAILING	LF	663		
17	BLANK					
18	043170	RECONSTRUCT STEEL LATTICE	EA	68		
19	043171	REMOVE RIVETS	EA	68		
20	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

**TOTAL BID:**

**\$** \_\_\_\_\_